RFRP # 14/15-003
Bridge Girder Alternatives for Extremely Aggressive Environments

Question:
The RFP appears to be intentionally vague in qualifying the specifics of the girder other than the length range (30 to 75 ft).
Should the proposer consider:

- FRP stand-alone elements only
- both PC and RC (are these the hybrids ?)
- in the case of PC, both pre-tensioning and posttensioning
- in case of concrete presence, both precast and cast-in-place

Response:
The RFRP is intended to be more broad than vague. The literature review (Task 1) is an extensive review, but parameters used to rank the concepts are specific (Task 2). Any viable concept may be considered, with the supposition that viability includes consideration for the design process, constructability, material, maintenance, service life, cost, and other criteria that may need to be addressed. It is not the intention to spend effort on concepts that are not considered viable. Where several concepts are similar, it is acceptable if not necessary to generalize. As Task 2 is completed, those concepts that were generalized should be developed more fully.

"Hybrid-FRP" refers to using FRP in conjunction with other materials, such as concrete or steel.

We are open to all the options above, however, utilizing current standards and replacing the typical steel reinforcement with FRP is not the solution we are seeking. The methodology of typical prestressed concrete and reinforced concrete is already covered within certain codes, i.e. ACI 440. We would be open to innovative solutions outside what is covered within ACI or other existing codes that cover FRP materials. FDOT is currently utilizing FRP to a certain level which is described at the following link:
http://www.dot.state.fl.us/structures/innovation/FRP.shtm

Question:
A bridge girder including FRP should be coupled with a deck also reinforced with FRP bars. Should the proposer consider this aspect in the design?

Response:

In Florida, an FRP reinforced deck is not as important as it might be in northern states that apply salts and chemicals on bridge decks. The girder should be adaptable to decks with black steel reinforcing. That being said, a deck girder design does not have to be ruled out. That is, consideration for FRP as deck reinforcement can be considered. FDOT is already open to current uses of FRP as shown in the following website link: http://www.dot.state.fl.us/structures/innovation/FRP.shtm .

Question:
Is the proposal based on purely published analytical literature? Is there any expectation on experimental testing and additional test data as a part of the study?

Response:
There is no expectation of any actual experimental testing within this study. This research is anticipated to be phased, dependent upon the viability of the proposed girder alternatives. It is anticipated that the second phase, if warranted, would further develop, construct, and test selected FRP or hybrid-FRP girders.

Question:
FRP materials/products are available in the form of sheets, bars, tendons, etc. The products information are proprietary. Are there any constraints on the use of any available FRP product in a viable no-proprietary FRP and hybrid-FRP structural system?

Response:
It is known that a large majority of FRP products are proprietary. The bridge girder alternative should not be proprietary as a whole. Components may be proprietary, but similar products must be available from other producers so as not to sole source the component. For example, the design may include FRP bars for which Companies A, B, and C have similar proprietary products that can be used. Do not specify a bar that only Company A can make or license.

Question:
What is the suggested project duration and budget?

Response:
Proposer should provide a timeline and budget based on the level of effort being proposed.

Question:
Is UHPC considered to be a proprietary product by FDOT?

Response:

Currently, there is one known provider of UHPC, making it proprietary. If there are other known suppliers of UHPC or equivalents then it could be considered.